U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

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CHROMIUM IN OCTOBER 1996

Chromite consumption increased by 30% in October 1996 compared with the previous month's revised data, according to the U.S. Geological Survey. Net production of chromium ferroalloys and metal in October decreased 45% compared with data for September, and consumption of chromium ferroalloys and metal in October increased 51% compared with revised data for September. Chromite stocks decreased 7% over the same period. At the October rate of consumption, chromium stocks represented 9 months of domestic supply. Chromium ferroalloys and metals stocks increased 17% compared with data for September. At the October rate of consumption, chromium ferroalloys and metal stocks represented 0.8 months of domestic supply.

Included in this Mineral Industry Surveys are: U.S. consumption and stocks of chromite; U.S. net production, net shipments, and stocks of chromium materials; U.S. consumption by end use and consumer stocks of chromium ferroalloys and metal for October; U.S. Government inventory; and foreign trade for September.

Update

The International Chromium Development Association (ICDA) has prepared a brief (three pages front and back) report entitled *A Review of Skin Sensitization Caused by Chromium* oriented to the general public. Copies are available upon request while they last. Contact the author of this Mineral Industry Surveys. The report concluded that allergic contact dermatitis caused by chromium compounds has been known since 1925 and is still common. While some trivalent chromium compounds are known skin sensitizers, hexavalent chromium compounds are considered to be the strongest sensitizers; according to maximization tests, they are strong to extreme sensitizers. It is generally accepted that chromium metal and chromium in low-sulfur stainless steels are non-sensitizing. The report comments specifically on the cement industry, dental and orthopedic implants, stainless steel and stainless steel welding, galvanizing and electroplating, oral exposure, and patch testing.

Prepared by the Metals Section and the Data Collection and Coordination Section, January 9, 1997.

TABLE 1
U.S. SALIENT CHROMIUM STATISTICS 1/

(Metric tons, gross weight unless otherwise noted)

	1995	1996				
	Year total	2nd quarter	Aug.	Sept.	Oct.	Jan. - Oct.
Production:						
Chromium ferroalloys and metal: 2/						
Net production:						
Gross weight	72,500	13,700	1,180	793	430	35,400
Chromium content	49,500	9,630	904	572	412	25,100
Net shipments	72,100	11,700	1,800	(45)	1,640	37,600
Stainless steel production 3/	2,030,000	521,000	(4/)	(4/)	NA	1,020,000 5/
Components of U.S. supply:						
Stainless steel scrap receipts	663,000	143,000	38,300	42,200	50,900	488,000
Imports for consumption						
Chromite ore	253,000	94,500	48,100 r/	36,600	NA	192,000 5/
Chromium ferroalloys 6/	495,000	149,000	38,900	24,000	NA	355,000 5/
Chromium metals 7/	7,040	2,310	606	700	NA	6,580 5/
Stainless steel	NA	NA	NA	NA	NA	NA
Stainless steel scrap	43	13	4	5	NA	38 5/
Distribution of U.S. supply:						
Consumption:						
Chromite ore	356,000 8/	82,400	18,300	14,300	18,600	244,000
Chromium ferroalloys & metals	283,000	67,600	19,400	20,000 r/	30,200	236,000
Exports:						
Chromite ore	17,800	56,700	1,060	614	NA	65,600 5/
Chromium ferroalloys	9,360	1,700	676	955	NA	7,090 5/
Chromium metals	714	384	63	137	NA	1,050 5/
Stainless steel	NA	NA	NA	NA	NA	NA
Stainless steel scrap	368	77	29	30	NA	227 5/
Stocks at end of period:						
Industry:						
Chromite ore:						
Chemical and metallurgical	194,000	160,000	174,000	183,000	171,000	XX
Refractory	10,900	8,510	8,100	8,010	7,560	XX
Total	205,000	169,000	182,000	191,000	178,000	XX
Chromium ferroalloys and metal:						
Producer	8,430	8,000	6,620	7,460	6,250	XX
Consumer	10,700	12,900	16,200	13,700	18,600	XX
Government stockpile:						
Chromite ore	1,320,000	1,200,000	1,200,000	1,190,000	1,190,000	XX
Chromium ferroalloys	1,070,000	1,070,000	1,070,000	1,070,000	1,070,000	XX
Chromium metals	7,690	7,690	7,690	7,720	7,720	XX

r/ Revised. NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes low- and high-carbon ferrochromium, chromium concentrates, ferrochromium, chromium metal, and other miscellaneous alloys.

3/ Data on stainless steel production from American Iron and Steel Institute, quarterly production of stainless and heat resisting raw steel.

4/ Not reported monthly.

5/ Includes data for January through September; October not available at time of publication.

6/ Includes high-, medium-, and low- ferrochromium and ferrochromium silicon.

7/ Includes waste and scrap and other.

8/ Includes withheld data for February through December.

TABLE 2
U.S. CONSUMPTION, BY END USE, AND CONSUMER STOCKS OF
CHROMIUM FERROALLOYS AND METAL IN OCTOBER 1996 1/

(Metric tons, gross weight unless otherwise noted)

End use	Ferrochromium		Ferro-chromium silicon	Other	Total	Jan. through Oct total 2/
	Low-carbon	Medium- and high-carbon				
Steel:						
Carbon	405	330	20	2	757	6,310
Stainless and heat resisting	W	20,100	W	W	20,100	167,000
Full alloy	315	1,740	79	5	2,140	22,100
High-strength low-alloy and electric	W	W	501	--	501	7,770
Tool	W	457	W	W	457	2,940
Cast irons	W	123	W	W	123	1,320
Superalloys	217	W	--	275	492	7,780
Alloys:						
Welding materials 3/	--	1	--	2	3	28
Other alloys 4/	27	W	--	50	77	630
Miscellaneous and unspecified	1,290	765	3,490	(5/)	5,540	20,200
Total: 6/ gross weight	2,260	23,500	4,090	333	7/ 30,200	XX
Chromium content	1,520	14,200	1,470	311	17,500	XX
Stocks, Oct. 31, 1996	1,470	15,300	1,580	222	8/ 18,600	XX
Jan. through Oct.: 2/						
Total	16,800	177,000	38,300	3,590	9/ XX	236,000
Chromium content	11,100	104,000	13,500	3,220	XX	132,000

W Withheld to avoid disclosing company proprietary data; included in "Miscellaneous and unspecified." XX Not applicable.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes revised data from previous months.
3/ Includes structural and hard-facing materials.
4/ Includes cutting materials and magnetic, aluminum, copper, nickel, and other alloys.
5/ Withheld to avoid disclosing company proprietary data.
6/ Includes estimates.
7/ Includes 284 tons of chromium metal.
8/ Includes 173 tons of chromium metal.
9/ Includes 2,840 tons of chromium metal.

TABLE 3
U.S. GOVERNMENT STOCKPILE INVENTORY 1/ OF CHROMIUM MATERIALS 2/

(Metric tons)

Period	Chromite ore			Chromium ferroalloys			Chromium metal	
	Chemical	Metal-lurgical	Refractory	High-carbon ferro-chromium	Low-carbon ferro-chromium	Ferro-chromium silicon	Alumino-thermic	Electrolytic
1995:								
October	220,000	792,000	333,000	738,000	283,000	52,900	2,670	5,020
November	220,000	792,000	333,000	738,000	283,000	52,900	2,670	5,020
December	220,000	773,000	328,000	738,000	283,000	52,900	2,670	5,020
1996:								
January	220,000	750,000	328,000	738,000	283,000	52,900	2,670	5,020
February	220,000	739,000	328,000	738,000	283,000	52,900	2,670	5,020
March	220,000	722,000	328,000	738,000	283,000	52,900	2,670	5,020
April	220,000	717,000	328,000	738,000	283,000	52,900	2,670	5,020
May	220,000	694,000	328,000	738,000	283,000	52,900	2,670	5,020
June	220,000	658,000	327,000	738,000	283,000	52,900	2,670	5,020
July	220,000	655,000	322,000	738,000	283,000	52,900	2,670	5,020
August	220,000	655,000	322,000	738,000	283,000	52,900	2,670	5,020
September	220,000	647,000	322,000	734,000	283,000	52,700	2,670	5,050
October	220,000	645,000	322,000	732,000	283,000	52,700	2,670	5,050

1/ Includes specification and non-specification grade materials and materials set aside for disposal but not yet shipped.
2/ Data are rounded to three significant digits.

Source: Defense National Stockpile Center.

TABLE 4
U.S. EXPORTS OF CHROMITE ORE, CHROMIUM FERROALLOYS AND METAL 1/

Period	Chromite ore		Chromium ferroalloys 2/			Chromium metal 3/	
	Gross weight (metric tons)	Value (thousands)	Gross weight (metric tons)	Chromium content (metric tons)	Value (thousands)	Gross weight (metric tons)	Value (thousands)
1995:							
September	1,350	294	876	530	1,240	61	652
October	1,140	228	923	560	1,270	42	616
November	1,330	425	591	353	855	48	424
December	1,420	205	528	289	639	157	1,520
Total	17,800	3,430	9,360	5,540	12,500	714	7,820
1996:							
January	1,740	427	885	519	1,120	86	1,000
February	1,700	407	887	536	1,230	44	618
March	1,840	484	669	399	894	124	1,450
April	17,100	2,280	734	444	843	165	1,530
May	1,730	1,160	472	288	597	76	863
June	37,900	4,270	490	291	583	143	1,110
July	1,920	568	1,320	797	1,640	214	1,820
August	1,060	564	676	411	694	63	717
September	614	132	955	554	912	137	772
Total	65,600	10,300	7,090	4,240	8,510	1,050	9,880

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes low-, medium-, and high-carbon ferrochromium, and ferrochromium-silicon.
3/ Includes wrought and unwrought and waste and scrap.

Source: Bureau of the Census.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF CHROMITE ORE,
FERROCHROMIUM, AND CHROMIUM METAL 1/

(Metric tons)

	1995	1996			
	Jan. - Dec.	July	August	September	Jan. - Sept.
Chromite ore:					
Not more than 40% chromic oxide:					
Gross weight	11,600	38	--	--	8,030
Chromic oxide content	4,120	15	--	--	2,650
More than 40% but less than 46% chromic oxide:					
Gross weight	14,800	4,540	--	--	19,600
Chromic oxide content	6,110	1,850	--	--	8,420
46% or more chromic oxide:					
Gross weight	226,000	--	43,100	36,600	164,000
Chromic oxide content	109,000	--	19,900	17,100	76,400
Total, all grades:					
Gross weight	253,000	4,580	43,100	36,600	192,000
Chromic oxide content	119,000	1,870	19,900	17,100	87,500
Ferrochromium:					
Low-carbon: 2/					
Gross weight	65,800	4,070	4,880	2,920	50,900
Chromium content	42,800	2,440	3,230	1,930	31,800
Medium-carbon: 3/					
Gross weight	7,570	--	--	--	36
Chromium content	4,930	--	--	--	23
High-carbon: 4/					
Gross weight	422,000	27,200	34,000	21,100	304,000
Chromium content	254,000	16,700	18,100	12,800	176,000
Total, all grades					
Gross weight	495,000	31,300	38,900	24,000	355,000
Chromium content	301,000	19,100	21,400	14,700	208,000
Chromium metal:					
Other than waste and scrap	6,930	451	606	696	6,550
Waste and scrap	109	--	--	3	38
Total, all grades	7,040	451	606	700	6,580

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Ferrochromium containing not more than 3% carbon.
3/ Ferrochromium containing more than 3% carbon but not more than 4% carbon.
4/ Ferrochromium containing more than 4% carbon.

Source: Bureau of the Census

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF CHROMITE ORE IN SEPTEMBER 1996,
BY GRADE AND BY COUNTRY 1/

Country	September			January - September 2/		
	Gross weight (metric tons)	Cr_2O_3 (metric tons)	Value 3/ (thousands)	Gross weight (metric tons)	Cr_2O_3 (metric tons)	Value 3/ (thousands)
Not more than 40% chromic oxide:						
Canada	--	--	--	20	8	$3
Philippines	--	--	--	7,940	2,620	1,060
Venezuela	--	--	--	46	18	16
Zimbabwe	--	--	--	23	9	3
Total	--	--	--	8,030	2,650	1,080
More than 40% but less than 46% chromic oxide:						
South Africa	--	--	--	19,700	8,420	1,970
46% or more chromic oxide:						
South Africa	36,600	17,100	$3,340	164,000	76,400	14,700
Total, all grades:						
Canada	--	--	--	20	8	3
Philippines	--	--	--	7,940	2,620	1,060
South Africa	36,600	17,100	3,340	183,000	84,800	16,600
Venezuela	--	--	--	46	18	16
Zimbabwe	--	--	--	23	9	3
Total	36,600	17,100	3,340	191,000	87,500	17,700

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes revised data from previous months.

3/ Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance and other charges incurred in bringing the merchandise to the United States.

Source: Bureau of the Census.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF FERROCHROMIUM IN SEPTEMBER 1996,
BY GRADE AND BY COUNTRY 1/

Country	September			January - September		
	Gross weight (metric tons)	Chromium content (metric tons)	Value 2/ (thousands)	Gross weight (metric tons)	Chromium content (metric tons)	Value 2/ (thousands)
High-carbon ferrochromium: 3/						
Albania	--	--	--	8,170	4,730	$5,170
China	2,100	1,290	$965	9,860	6,280	6,540
Croatia	--	--	--	9,430	5,880	6,110
Estonia	--	--	--	8,310	5,400	5,360
Finland	--	--	--	9,020	4,790	4,820
Germany	--	--	--	19	14	38
India	--	--	--	6,150	3,810	3,860
Japan	--	--	--	18	12	25
Kazakstan	--	--	--	77,600	46,800	45,600
Russia	--	--	--	17,500	9,370	13,200
South Africa	3,900	2,000	1,430	83,300	42,300	37,400
Turkey	9,040	5,600	4,050	39,600	24,500	25,500
United Kingdom	--	--	--	496	312	392
Zimbabwe	6,070	3,870	3,300	34,200	21,700	22,600
Total	21,100	12,800	9,750	304,000	176,000	177,000
Medium-carbon ferrochromium: 4/						
Philippines	--	--	--	36	23	47
Low-carbon ferrochromium: 5/						
China	336	221	486	8,060	5,280	12,400
Croatia	--	--	--	20	13	17
France	--	--	--	141	98	294
Germany	840	586	1,970	6,760	4,710	15,500
India	385	264	650	970	669	1,680
Japan	32	23	86	272	190	686
Kazakstan	--	--	--	152	106	257
Russia	1,150	730	1,670	13,200	8,620	19,600
South Africa	--	--	--	17,400	9,680	14,600
Turkey	100	73	229	902	652	1,890
United Kingdom	76	36	183	236	147	440
Zimbabwe	--	--	--	2,740	1,670	2,850
Total	2,920	1,930	5,270	50,900	31,800	70,200
Total, all grades:						
Albania	--	--	--	8,170	4,730	5,170
China	2,440	1,510	1,450	17,900	11,600	18,900
Croatia	--	--	--	9,450	5,900	6,130
Estonia	--	--	--	8,310	5,400	5,360
Finland	--	--	--	9,020	4,790	4,820
France	--	--	--	141	98	294
Germany	840	586	1,970	6,780	4,720	15,500
India	385	264	650	7,120	4,480	5,550
Japan	32	23	86	290	202	711
Kazakstan	--	--	--	77,700	46,900	45,800
Philippines	--	--	--	36	23	47
Russia	1,150	730	1,670	30,700	18,000	32,800
South Africa	3,900	2,000	1,430	101,000	52,000	52,000
Turkey	9,140	5,680	4,280	40,500	25,200	27,400
United Kingdom	76	36	183	733	459	832
Zimbabwe	6,070	3,870	3,300	37,000	23,300	25,500
Total	24,000	14,700	15,000	355,000	208,000	247,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance and other charges incurred in bringing the merchandise to the United States.

3/ Ferrochromium containing more than 4% carbon.

4/ Ferrochromium containing more than 3% but not more than 4% carbon.

5/ Ferrochromium containing not more than 3% carbon.

Source: Bureau of the Census.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF CHROMIUM METAL IN
SEPTEMBER 1996, BY GRADE AND BY COUNTRY 1/

Country	September		January - September	
	Gross weight (metric tons)	Value 2/ (thousands)	Gross weight (metric tons)	Value 2/ (thousands)
Waste and scrap:				
Canada	3	$7	5	$14
China	--	--	17	103
Russia	--	--	(3/)	2
Sweden	--	--	16	69
Total	3	7	38	189
Other than waste and scrap:				
Australia	--	--	(3/)	2
China	222	1,180	1,190	6,820
France	110	886	1,140	8,950
Germany	34	331	185	1,780
Hong Kong	--	--	52	284
India	--	--	(3/)	11
Japan	14	351	228	4,390
Korea, Republic of	--	--	2	8
Netherlands	--	--	(3/)	2
Portugal	--	--	2	106
Russia	209	1,200	2,780	16,200
Spain	--	--	1	35
Switzerland	--	--	4	16
Taiwan	2	20	7	92
United Kingdom	105	814	953	7,680
Total	696	4,780	6,550	46,400
Total, all grades:				
Australia	--	--	(3/)	2
Canada	3	7	5	14
China	222	1,180	1,210	6,930
France	110	886	1,140	8,950
Germany	34	331	185	1,780
Hong Kong	--	--	52	284
India	--	--	(3/)	11
Japan	14	351	228	4,390
Korea, Republic of	--	--	2	8
Netherlands	--	--	(3/)	2
Portugal	--	--	2	106
Russia	209	1,200	2,780	16,200
Spain	--	--	1	35
Sweden	--	--	16	69
Switzerland	--	--	4	16
Taiwan	2	20	7	92
United Kingdom	105	814	953	7,680
Total	700	4,790	6,580	46,600

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance and other charges incurred in bringing the merchandise into the United States.
3/ Less than 1/2 unit.

Source: Bureau of the Census.